

CLAIMS

I claim:

1. A differential for a drive axle comprising:
 - a first differential case half;
 - a second differential case half attached to said first differential case half to form a differential case assembly;
 - at least one bearing supporting said differential case assembly for rotation relative to a non-rotating axle housing member about a differential case axis of rotation; and
 - a ring gear fixed for rotation with said differential case assembly and including an outer circumference portion having a plurality of ring gear teeth and an inner circumference portion defining an opening for receiving a tubular portion of said differential case assembly wherein said inner circumference portion is constrained between said bearing and said differential case assembly to accommodate thrust loads.
2. A differential as set forth in claim 1 wherein said tubular portion is coaxial with said differential case axis of rotation
3. A differential as set forth in claim 2 wherein said ring gear is constrained from movement in a direction parallel to said differential case axis of rotation between said bearing and said differential case assembly.
4. A differential as set forth in claim 3 wherein said tubular portion comprises a first tubular portion formed on one of said first and second differential case halves, said one of said first and second differential case halves including a second tubular portion having

a greater diameter than said first tubular portion and a transitional surface extending between said first and second tubular portions with said ring gear being positioned between said transitional surface and said bearing.

5. A differential as set forth in claim 4 wherein said ring gear includes a first side on which said ring gear teeth are formed and a second side facing opposite from said ring gear teeth, said inner circumference portion including a first surface on said first side and a second surface on said second side wherein said first surface directly engages said transitional surface and said second surface directly engages said bearing.

6. A differential as set forth in claim 2 wherein said inner circumference portion is directly attached to said tubular portion.

7. A carrier assembly for a drive axle comprising:

a pinion gear operably coupled to an input shaft defining a pinion gear axis of rotation;

a ring gear driven by said pinion gear about a ring gear axis of rotation positioned transversely to said pinion gear axis of rotation, said ring gear having a back side and an opposing front side with a plurality of ring gear teeth;

a differential case including a first differential case half and a second differential case half attached to said first differential case half wherein said ring gear is mounted to said second differential case half; and

at least one bearing supporting said second differential case half for rotation relative to a non-rotating axle housing member about a differential case axis of rotation coaxial with said ring gear axis of rotation wherein said ring gear is constrained from movement in a direction parallel to said differential case axis of rotation between said bearing and said second differential case half to accommodate thrust loads.

8. An assembly as set forth in claim 7 wherein said ring gear comprises an outer circumference portion including said ring gear teeth and an inner circumference portion defining an opening surrounding a portion of said differential case half, said inner circumference portion being constrained between said bearing and said second differential case half.

9. An assembly as set forth in claim 8 wherein said second differential case half includes a central body portion with a flange extending out radially around said central body portion and a tubular end portion extending outwardly in a lateral direction from

said central body portion, said tubular end being coaxial with said differential case axis of rotation.

10. An assembly as set forth in claim 9 wherein said tubular end portion includes a first tubular portion defining a first diameter, a second tubular portion defining a second diameter greater than said first diameter, and a transitional surface extending between said first and second tubular portions to form a stop for said ring gear.

11. An assembly as set forth in claim 10 wherein said stop is generally perpendicular to said differential case axis of rotation.

12. An assembly as set forth in claim 11 wherein said front side of said inner circumference portion directly engages said stop and said back side of said inner circumference portion directly engages said bearing.

13. An assembly as set forth in claim 9 wherein said inner circumference portion defines a first attachment interface and wherein said tubular end portion defines a second attachment interface, said first and second attachment interfaces cooperating with each other to fix said ring gear for rotation with said second differential case half.

14. An assembly as set forth in claim 8 wherein said ring gear is fixed for rotation with said second differential case half about said differential case axis of rotation and is constrained from movement in a direction parallel to said differential case axis of rotation without the use of fasteners.

15. An assembly as set forth in claim 8 wherein said first and second differential case halves are comprised of iron.